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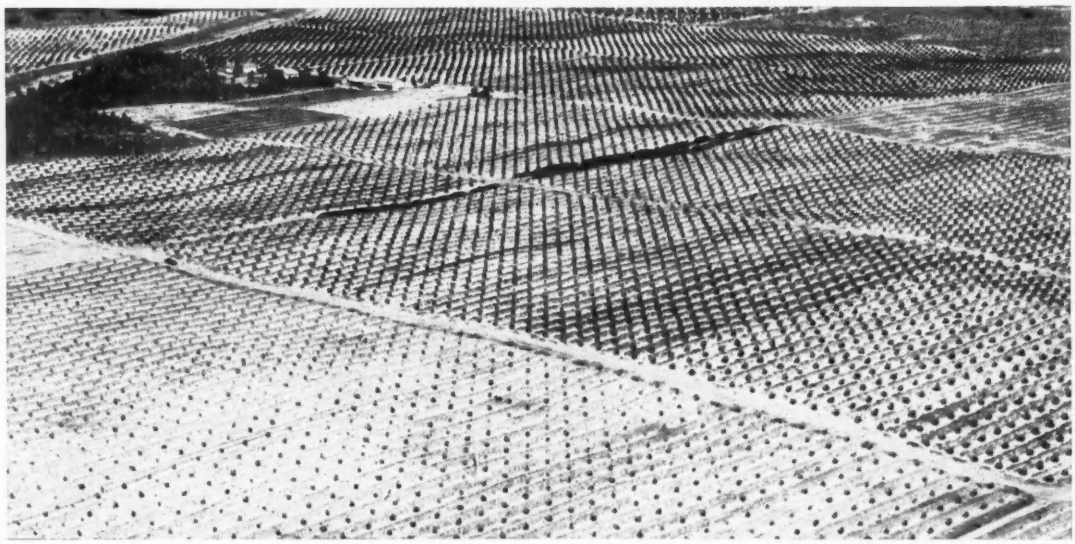
GUY MAXCY

Prominent Florida grove operator and citrus factor, also with apple orchard holdings in North Carolina, died of a heart attack aboard an airliner while enroute with his family from Rome to Tel Aviv on August 24. He was a resident of Sebring and well known throughout the citrus area of Florida.

VOL. 12 — NO. 10 OCTOBER, 1961 BARTOW, FLORIDA



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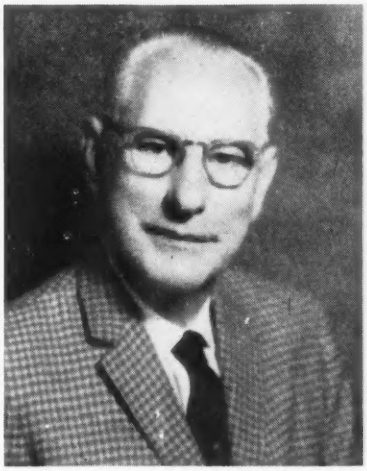
What Lies Ahead In Citrus Marketing?

...By...



MARVIN H. WALKER

Paper presented at Camp McQuarrie August 10, 1961

— — —

There will be many changes in citrus products and the methods of marketing them in the years ahead. Just what the changes will be and how soon they will come, I do not know, but they are inevitable, and there are some indications of what they may be.

The economic pressures of larger Florida citrus crops and the rapidly increasing competition of other foods, juices and drinks will force us to do many things which thus far have been only dreams in the minds of our research and marketing people.

Excepting for the development of chilled orange juice and chilled citrus salad, which are taking about 15 percent of the orange crop and 5 percent of the grapefruit crop, we have done practically nothing in product development to expand consumption in recent years.

There have been no substantial improvements in the last 10 years in the quality, appearance and consumer acceptability of our fresh fruit, our canned juices and even frozen concentrates. In fact, there are valid criticisms that some of these products are not as good as they used to be, though we have improved the uniformity and stability of concentrates.

In cash returns from marketing, citrus is the sixth most important farm crop in the United States — one-fourth as important as wheat, and one-third as important as corn, but the comparatively high prices for citrus in recent years have greatly stimulated new plantings and lulled us into a false sense of security. Now we are suddenly faced with larger crops and more intense competition from other juices and drinks.

The per capita consumption of some of our products has either hit a plateau or declined, and U. S. citrus production now is increasing faster than the U. S. population. Increased export sales are not likely to solve the problem. Prosperous, growing Western Europe can consume much larger quantities of citrus, but our sales there are almost certain to be limited by trade restrictions and the rapidly increasing citrus production of the Mediterranean, South African and South American countries which will give us very stiff competition in all foreign markets.

More advertising, by itself, will not solve the problem of marketing more citrus fruit and products in this country. No food can be successfully advertised unless it has good consumer acceptability, and it is quite obvious that some of our products lack what most consumers want these days. This is especially true of canned juices and sections — and it is true of a lot of the fruit shipped fresh, too.

We must improve the quality of present products and we must develop new products. We must also reduce as much as possible our packing, distributing and marketing costs. As we do these things we must intensively advertise and merchandise the improved products and the new products we can develop. The answers to the problems facing us will be found mostly in research and advertising.

Six years ago, in a talk here, I prophesied there would be packed a higher-density frozen orange concentrate to which 4 or 5 cans of water would be added instead of 3, and that it would be a better product and the savings in container and distribution costs would expand the consumption of orange juice. It is a logical assumption that if the consumer got 30 ounces instead of 24 ounces of orange juice from a 6-ounce can of concentrate, at little more cost, that more would be consumed.

I am confident of this now as I was then, but product changes like this come slowly, especially in an industry like ours, which is so standardized and regulated. One packer has started packing a 4 plus 1 concentrate in 32-ounce cans for institutions, and it is just a matter of time when concentrate in retail-size cans will be of higher density.

There are other product developments and improvements which I feel will come in time. One is the packing of canned reconstituted orange juice in distant terminal markets — which would save freight costs and make possible the packing of a canned juice of uniform quality because of the opportunity to blend bulk concentrates in packing a reconstituted product. It would be a fresher canned juice, too, as it could be packed every month or two.

Packing in terminal market areas is not a new idea. Most of the pineapple-grapefruit drinks, which have become large sellers, are packed from concentrates in distribution centers throughout the country. Most of the fruit-flavored drinks, which are giving us more competition every year, also are packed in market areas.

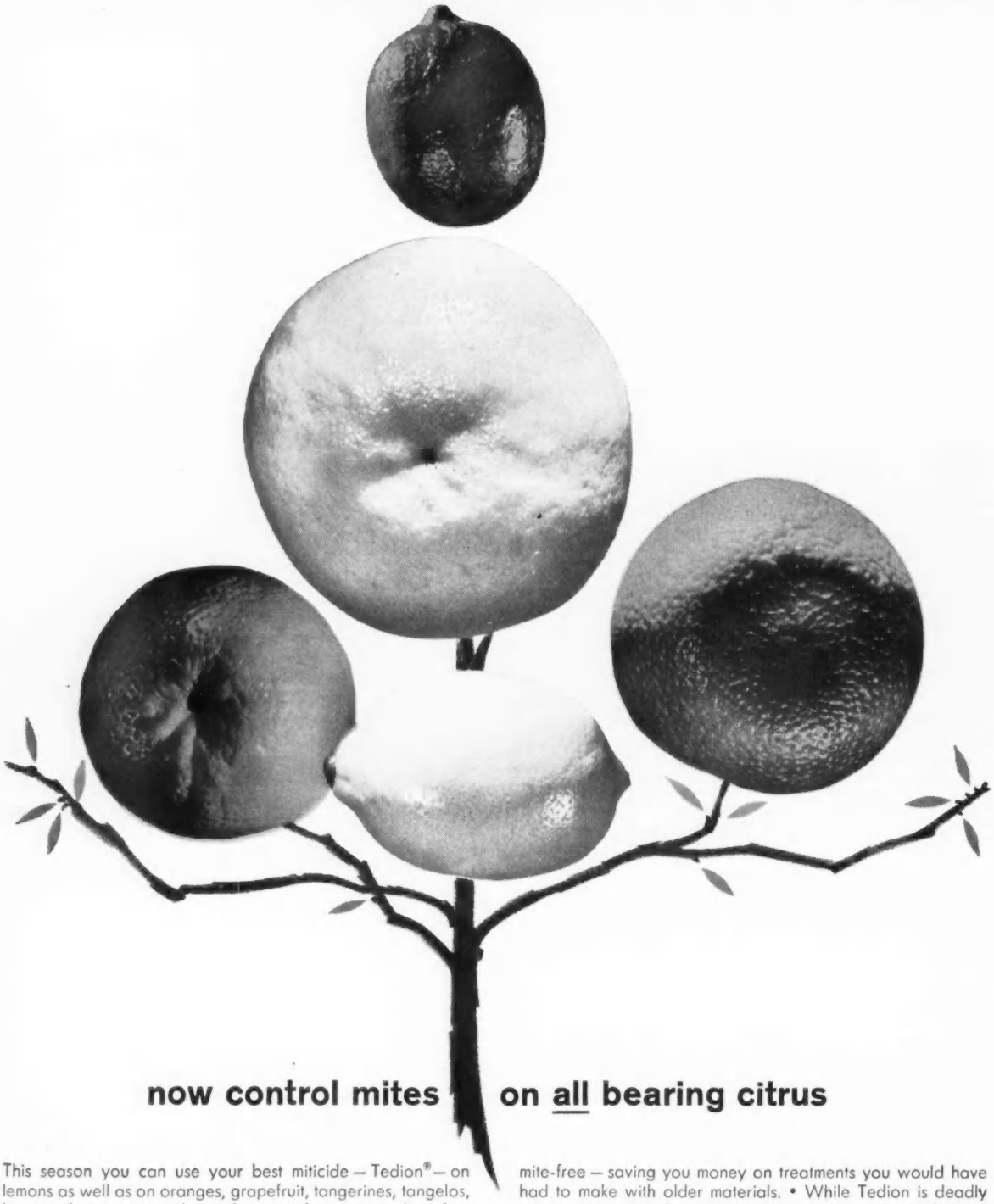
Under proposed U. S. Food and Drug standards of identity for orange juice products, a canned orange juice packed from concentrate would have to be labelled reconstituted orange juice, but if it is better than the orange juice consumers have been getting, I believe it can be successfully promoted.

Another product which may expand consumer consumption in future years is individually-frozen sections, grapefruit or oranges — which would be of far better quality than canned sections, and more convenient to serve than frozen canned grapefruit sections, which take too much time to thaw. Individually-frozen sections would have some advantages over chilled sections and salad too, as they would not require preservatives and could be stored almost indefinitely.

Containers for individually frozen sections sold in retail stores are a problem because they must have enough insulation to keep the sections from melting until the housewife gets them into her deep-freeze at home. Some of the new cartons for ice cream which can companies are developing may be the answer to this problem — or the aluminum foil package which a Seattle brewery is using for a six-can pack of cold beer.

There is always the possibility that

(Continued on Page 10)



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The Citrus Industry
EXCLUSIVE SPECIALIZED CITRUS PUBLICATION
Issued Monthly
Representative of every interest
Representing no special interest

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74th Annual Horticultural Society Meeting To Be Held In Miami Beach, Oct. 31-Nov. 2

The seventy-fourth Annual Meeting of the Florida State Horticultural Society will be held in Miami Beach at the Barcelona Hotel October 31 - November 2.

The following program will be presented during the Annual Meeting which will begin with the

General Session

WEDNESDAY MORNING, NOVEMBER 1, 1961 — 9:00 A. M.
Mrs. Ruth S. Wedgworth, President
Presiding

President's Address ..... *Mrs. Ruth S. Wedgworth*
Belle Glade

Address ..... *Dr. Marshall O. Watkins*
Director of Florida Agricultural Extension Service

Dr. Watkins' address will be on the subject "Education— What's It Worth to Florida Horticultural Industries"

Address ..... *A. Worley Brown*
Chairman Florida Industrial Commission

Mr. Brown will discuss "The Challenge of the 60's"

* * * * * *

Annual Banquet

WEDNESDAY EVENING, NOVEMBER 1, 1961 — 7:30 P. M.
Ballroom

Master of Ceremonies ..... *M. U. "Red" Mounts*
Agricultural Agent of Palm Beach County

Citrus Section

C. R. Stearns, Vice President
Presiding

TUESDAY AFTERNOON, OCTOBER 31

2:00 — *Results of Spray Program on Tangerines in Relation to Scale Control and Fruit Color. W. L. Thompson, R. F. Brooks, Citrus Experiment Station,*

Lake Alfred, and M. F. Oberbacher, Florida Citrus Commission, Lake Alfred.

2:20 — *Do Adhesives Improve Mite Control? R. Johnson, Citrus Experiment Station, Lake Alfred.*

2:40 — *The Status of Chemical Weed Control in Florida Citriculture. J. T. McCown, Agricultural Extension Service, Gainesville, and D. W. Kretchman, Citrus Experiment Station, Lake Alfred.*

3:00 — *Effect of Fusarium Upon the Growth of Seedlings of Several Burrowing Nematode-Tolerant Citrus Rootstocks. W. A. Feder, U.S.D.A., Orlando and H. W. Ford, Citrus Experiment Station, Lake Alfred.*

3:20 — *Relation of Color to Quality in Citrus Fruit-I. The Murcott Honey Orange. W. G. Long, U.S.D.A., Orlando.*

3:40 — *The Distribution and Movement of Soil Moisture in Citrus Groves. R. C. J. Koo, Citrus Experiment Station, Lake Alfred.*

4:00 — *Parasitism of Purple Scale and Florida Red Scale in Florida Citrus Groves. M. H. Muma, Citrus Experiment Station, Lake Alfred, and D. W. Clancy, U.S.D.A., Lake Alfred.*

4:20 — *Experimental Materials to Control Citrus Mites. A. K. Burditt and A. G. Selhime, U.S.D.A., Orlando.*

4:40 — *Sectional Business Meeting.*

WEDNESDAY AFTERNOON, NOVEMBER 1

2:00 — *Program for Breeding Citrus for Tolerance to Various Climates. W. C. Cooper, J. R. Furr, and P. C. Reece, U.S.D.A., Orlando.*

2:20 — *A Comparative Study of Rootstocks for Valencia and Parson Brown Orange Varieties on Lakeland Soil. F. E. Gardner and G. E. Horanic, U.S.D.A., Orlando.*

2:40 — *The Rate and Timing of Nitrogen for Grapefruit on Lakeland Fine Sand. J. W. Sites, Agricultural Experiment Station, Gainesville; I. W. Wander, Growers Fertilizer Co-Operative, Lake Alfred; and E. J. Deszyck, Phillip Morris Tobacco Company, Richmond, Virginia.*

3:00 — *Effect of Nitrogen Source, Rate, and pH on the Production and Quality of Marsh Grapefruit. P. F. Smith and G. K. Rasmussen, U.S.D.A., Orlando.*

3:20 — *A Nitrogen Rate Experiment on Marsh Grapefruit in the Indian River Area. H. J. Reitz, Citrus Experiment Station, Lake Alfred, and R. R. Hunziker, Citrus Experiment Station, Fort Pierce.*

3:40 — *A Comparison of Ten Nitrogen Sources for Valencia Oranges. C. D. Leonard, I. Stewart, Citrus Experiment Station, Lake Alfred, and I. W. Wander, Growers Fertilizer Co-Operative, Lake Alfred.*

4:00 — *Comparison of Nitrogen Rates and Sources for Pineapple Oranges. I. Stewart, C. D. Leonard, Citrus Experiment Station, Lake Alfred, and I. W. Wander, Growers Fertilizer Co-Operative, Lake Alfred.*

4:20 — *The Effect of Fertilizer Rate and Timing on Growth of Citrus Trees the First Three Years in the Field. G. K. Rasmussen and P. F. Smith, U.S.D.A., Orlando.*

THURSDAY MORNING, NOVEMBER 2

9:00 — *Additional Citrus Rootstock Candidates That Tolerate the Burrowing Nematode. H. W. Ford, Citrus Experiment Station, Lake Alfred, and W. A. Feder, U.S.D.A., Orlando.*

9:20 — *Ten Years of Tristeza in Florida. C. Norman, Division of Plant Industry Winter Haven; W. C. Price, Citrus Experiment Station, Lake Alfred; T. J. Grant, U.S.D.A., Orlando; and H. Burnett, Division of Plant Industry, Winter Haven.*

9:50 — *Influence of Some Viruses and Genetic Conditions on the Growth of Tahiti Lime. A Progress Report. M. Cohen, Citrus Experiment Station, Fort Pierce; G. D. Reuhle and F. B. Lincoln, Subtropical Experiment Station, Homestead.*

10:10 — *Experience with Wind Machines for Frost Protection on Citrus in Florida. J. T. Griffiths, Eloise Growers Association, Winter Haven, and C. D. Hendershott, Florida Citrus Commission, Lake Alfred.*

10:30 — *Recent Development in Pruning Citrus. D. W. Kretchman, Citrus Experiment Station, Lake Alfred, and A. H. Krezdorn, Agricultural Experiment Station, Gainesvlle.*

10:50 — *Program for Breeding Citrus Rootstocks for Tolerance to Phytophthora Root Rot. J. R. Furr and J. B. Carpenter, U.S.D.A., Indio, California.*

11:10 — *The Influence of Pollinators on Fruit Set of Robnson and Osceola Tangerine Hybrids. P. C. Reece and R. O. Register, U.S.D.A., Orlando.*

Handling and Processing Section

Gray Singleton, Vice President
Presiding

TUESDAY AFTERNOON, OCTOBER 31

2:00 — *Picking Citrus Fruit by Mechanical Means. G. E. Coppock, Citrus Experiment Station, Lake Alfred.*

2:20 — *Perforations in Poly Bags as Related to Decay of Oranges. F. W. Hayward, Citrus Experiment Station, Lake Alfred.*

2:40 — *Some Observations on Holding 6-Ounce Cans of Frozen Concentrated Orange Juice at Room Temperature and at 40 Degrees, F., A Preliminary Report. C. H. Brokaw and D. I. Murdock, Minute Maid Corporation, Orlando.*

3:00 — *Factors Influencing Results from Rapid Tests for Potential Clarification in Frozen Orange Concentrate. M. D. Maraulja, Florida Citrus Commission, Lake Alfred; K. C. Li, North American Laboratories, Inc., Indianapolis, Indiana; and R. W. Olsen, Citrus Experiment Station, Lake Alfred.*

3:20 — *Grapefruit Seed Oil. R. Hendrickson and J. W. Kesterson, Citrus Experiment Station, Lake Alfred.*

3:40 — *Effects of Continuous Refrigeration on the Keeping Quality of Oranges. F. W. Hayward, Citrus Experiment Station, Lake Alfred.*

4:00 — *Sectional Business Meeting.*

WEDNESDAY AFTERNOON, NOVEMBER 1

2:00 — *Factors Affecting the Autoxidation of d-limonene During Storage. W. F. Newhall and J. W. Kesterson, Citrus Experiment Station, Lake Alfred.*

2:20 — *Recent Studies of the Effect of Pectinesterase on the Stability of Frozen Orange Concentrate. A. H. Rouse, Citrus Experiment Station, Lake Alfred; C. D. Atkins and E. L. Moore, Florida Citrus Commission, Lake Alfred.*

2:40 — *The Total Carotenoid and Carotene Content of Florida Frozen Orange Concentrate. S. V. Ting, Citrus Experiment Station, Lake Alfred.*

3:00 — *Newer Trends in Export and Interstate Shipments of Grapefruit. M. F. Oberbacher and H. M. Vines, Florida Citrus Commission, Lake Alfred.*

3:20 — *Changes in Carbon Dioxide Concentration Within Fruit and Containers During Storage. H. M. Vines and M. F. Oberbacher, Florida Citrus Commission, Lake Alfred.*

3:40 — *Biochemical Aspects of Fruit Metabolism. H. M. Vines, Florida Citrus Commission, Lake Alfred.*

4:00 — *Stabilizing Both the Fresh Fruit and Processing Markets by Quality Control at the Grove. Too Much Fruit Grown for Processing Depresses Both Markets. R. W. Rutledge, Florida Citrus Mutual, Lakeland.*

THURSDAY MORNING, NOVEMBER 2

9:00 — *Influence of Maturity and Storage Conditions on Shipping Quality of Sebago Potatoes. R. A. Dennison, Agricultural Experiment Station, Gainesville.*

9:20 — *Browning Enzymes on Eggplant. F. W. Knapp, Agricultural Experiment Station, Gainesville.*

9:40 — *A Study of the Microbiological Activity of Fresh Shelled and Unshelled Southern Peas During Storage. G. D. Kuhn, Agricultural Experiment Station, Gainesville.*

10:20 — *Effect of Injury and Fruit Maturity on Susceptibility of Citrus to Green Mold. J. J. Smoot, U.S.D.A., Orlando.*

10:40 — *Specific Gravity, Weight and Solids Relationships in Watermelons. R. K. Showalter, Agricultural Experiment Station, Gainesville.*

11:00 — *Volatile Materials From Celery and the Indentification of Some Compounds with Acidic Properties. H. J. Gold and C. W. Wilson, U. S. Fruit and Vegetable Products Laboratory, Winter Haven.*

11:20 — *Equilibrium Moisture Content of Orange Juice Powders at Low Relative Humidities. C. J. Wagner, U. S. Fruit and Vegetable Products Laboratory, Winter Haven.*

11:40 — *Recent Work on Southern Peas. A. P. Lorz, L. H. Halsey, and E. S. Holmes, Agricultural Experiment Station, Gainesville.*

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Value of Trade Fairs In Future of Citrus Exports

...By...

MARTIN E. HEARN
FLORIDA CITRUS MUTUAL
LAKELAND, FLORIDA

Paper presented at Camp McQuarrie August 10, 1961

— — —

An international trade fair, such as the ones the Florida citrus industry has participated in abroad over the past five years should not be confused with "world fairs" of the type held in New York City in 1939-40. World Fairs are essentially prestige expositions and are only incidentally commercial in scope and objective. Visitors are not primarily interested in buying, but attend them because of their educational value and the entertainment they provide.

The international trade fair of today can be defined as an event where the participant can transact a maximum amount of business in a minimum amount of space and at a minimum expenditure of money, time and effort and where, in a modern setting, there is applied one of the oldest and most effective methods of merchandising known to man — the display of goods, whether they are to be sold at the fair or on order, in an attractive manner for ready inspection.

Possibly the closest analogy found in this country is the specialized industry convention where business firms handling the types of equipment or merchandise of interest to a select group can set up promotional booths, provide informational material, entertain and cultivate new business. In essence, an international trade fair is a convention attended by sellers, buyers, intermediaries **and** the consuming public which, actually has the last word in the successful sale of any product and is available on the spot for views, likes and dislikes.

Up to seven years ago, American participation in overseas trade fairs was carried out exclusively by individual firms with little cohesive effort or unified planning. In August 1954, at industry request, Congress directed the establishment of International Trade Fair Programs in both the U. S. Department of Commerce and the U. S. Department of Agriculture; funds to operate these new agencies were derived from additional appropriations or from the sale of surplus agricultural commodities abroad under Public Law No. 480, while the buildings, display booths and architectural work were also paid from the same foreign currencies.

Industry contribution consisted in supplying merchandise or equipment free of charge or loaning qualified bilingual personnel to assist Government officers, but the combined efforts of private trade and Federal Government cooperation in foreign trade fairs has resulted in greater prestige and standing for all involved.

At the outset, many firms viewed these Trade Fair Programs with misgivings, doubtful whether the results obtained would be worthwhile. But after seeing how effective joint participation by industry and Government was and witnessing for themselves how profitably their products were exhibited and demonstrated, they returned zealous converts.

Not only is a trade fair a relatively painless way for an exporter to break into the export market, but it gives potential consumers a first-hand chance to examine, test and compare American agricultural products with others in appearance, price, flavor and quality. It furnishes a unique opportunity for the discussion of technical points and sales conditions, availability of supplies and other factors between buyers, industry representatives and consumers. It allows an immediate exchange of information on customs tariffs, exchange regulations and other data necessary for the transfer of goods and payments from one country to another. It can help uncover new unsuspected outlets for a variety of food products.

So far, American Government and industry have jointly participated in 121 trade fairs in 30 foreign countries before more than 65 million people; of these 32 were purely agricultural exhibits under the auspices of the Foreign Agricultural Service in which a comprehensive array of products from American farms and groves, together with descriptive literature in local languages were displayed before foreign consumers and buyers. Fruit and fruit products have in nearly every instance been prominently featured, and have invariably aroused considerable interest, and increased demand and sales overseas.

The question that comes to mind of course is — has participation in these trade fairs been worth the cost and effort expended? Happily, for the citrus industry, the answer is an emphatic YES. Some of the outstanding examples were the display and sampling of Florida frozen orange concentrate at the Cologne Food Fair in 1957 to 48,000 people, which not only resulted in an immediate order for over 1,000,000 gallons of bulk High-Brix orange juice from German commercial soft drink bottlers with repeat orders, but was directly instrumental, through German consumer pressure, in the removal of the import ban on the consumer size pack that up till then had been denied entry into Germany.

In Scandinavia, sampling of Florida single-strength citrus at exhibitions like the St. Erik's Fair introduced a new word into the Swedish vocabulary — "juice" and has popularized orange and grapefruit juice in that country.

At the Paris International Trade Fair this spring, serious trade enquiries for single-strength grapefruit juice exceeded a quarter of a million dollars in value. There, for the first time, an incredulous French public was introduced to Florida frozen orange concentrate where it had to be reconstituted before their eyes to convince them it was indeed a processed product and not juice extracted from fresh oranges. Also, in collaboration with the dairy industry of America, French children were treated to a

novel drink — an orange-milk nog made from orange concentrate and non-fat powdered milk — which almost overnight became a rage with the small fry and teenagers.

One of the advantages of citrus is that it lends itself so effectively to combine with other foods for flavor and eye appeal. An orange rice dish prepared with frozen concentrate not only looked far more attractive than just plain white boiled rice but had an unusually fine flavor. Wedges of oranges were used as decorations in gelatine dishes, or used to garnish cooked turkeys, chickens and cakes. Fresh grapefruit sections were blended into canned fruit salad adding life to the dessert. In every fair, citrus products have proven an outstanding success.

Another success story in international Trade Fairs programs was the creation and development of an entirely unsuspected market for American poultry. Five years ago roast turkey and fried chicken were virtually unknown outside the western hemisphere. Today, through sampling at such exhibits, these products enjoy world-wide acceptance, and the United States is now the leading exporter of poultry, with yearly sales totalling over $177 million.

American asparagus growers and canners at one time had difficulty disposing of the bottom stems trimmed from the spears of this vegetable; today, thanks to a sampling test market conducted at a Food Fair four years ago, this once unprofitable cull enjoys tremendous popularity among German housewives who use them to flavor clear soups.

During this test another interesting discovery was made — only the stems of white asparagus were acceptable to the German palate — the green variety was considered overripe and therefore unsaleable. In France, cranberry growers of New England still recovering from the setback of adverse Food and Drug publicity of three years previous, found a tremendous demand and acceptance for cranberry juice when it was sampled to the French populace at the Paris Trade Fair.

Another interesting aspect of the value of Trade Fairs has been the creation of side business in apparently completely unrelated lines. A recent example was in the refrigerated display cases used in Paris to show off fresh fruits and vegetables where new export business developed for the manufacturer of these appliances in France, and the sale of American electric mixers used in reconstituting powdered milk that was being sampled to the public.

In some countries sampling and display of American food that is under import quota has created such a strong demand for that particular product by the public that it has virtually forced the foreign Government to remove import restrictions.

To summarize, an international trade fair is the cheapest, most effcetive advertising media, primarily because it gets the product to the consumer; in Europe, where small individual groceries still dominate the retail trade and difficulty is experienced in conducting in-store demonstrations on a large scale such as is possible here in our chain stores, the foreign international trade fair is the ideal vehicle to sample as wide a group as possible, to obtain an immediate cross-section of consumer acceptance, to find out if any changes are necessary in local labelling requirements, and to determine whether modifications in manufacturing formulas are advisable to meet special regional preferences.

The citrus industry of this country has unquestionably derived tremendous benefit from its participation in these activities and we look to continuing this program in the years to come.

Snively Groves, Inc. Enlarges Operation

John A. Snively, Jr., President of Snively Groves, Inc., and Robert A. Saltzstein, President of Dairy Service Corporation, have issued the following statement:

Snively Groves has leased for a long term with an option to purchase, all the Dairy Service Corporation facilities at Brooksville, Florida. The Brooksville plant produces chilled juice and frozen concentrate.

Chilled Citrus Products Corporation, owned jointly by Snively Groves and Dairy Service will withdraw from the marketing of chilled sections and chilled orange juice, all of which sales will now be made directly by Snively Groves. Chilled Citrus Products Corporation will undertake other activities.

Dairy Service will continue to market Dairy Grove, Dairy Sweet, and private label frozen concentrate in consumer sizes to the dairy industry and will maintain an office at the Brooksville plant for this purpose. The processing for these brands will be executed by Snively Groves.

The first step in expansion of the Brooksville facility will be immediate construction of a cold storage room capable of maintaining temperatures at 40 degrees below zero, for the processing of bulk concentrate in fiber containers for the dairy industry. This will be completed in time for the new processing season. It will be the only one of its type in the citrus industry.

WHAT'S AHEAD IN CITRUS MARKETING?

(Continued from Page 3)

there will be developed a process for making a satisfactory powdered orange juice. The USDA laboratory at Winter Haven is working on this and making some progress, though there are dehydration and flavor stability problems to be solved to make powdered orange juice a really good product. Recent development of an electronic process for making a very high density concentrate may help bridge the gap between present concentrate packs and a powdered juice.

At Lake Wales, we have proved to our satisfaction that we can remove excessive citric acid from orange and grapefruit juices by an ion exchange process, which we think will make it possible to pack sweeter tasting juices without sugar. While it will be another year before we can do this commercially, we have high hopes that this process in time will substantially improve the flavor of all juice and concentrate packs.

When the U. S. Food and Drug Administration establishes standards of identity for orange juice products, probably next year, I believe it will permit the use in orange juice products of up to 10 percent of the juice of citrus reticulata varieties, which will be a great boon for tangerine growers. In recent years tangerine juice solids have sold for about half as much as orange juice solids because tangerine juice has had to be packed separately and labelled as a tangerine product. The addition of some tangerine juice would help the color of some of our orange juice products.

With the development of improved processed products and new products, the product standardization and commodity advertising of the Florida Citrus Commission may diminish in its importance to the industry. The Commission's program has been of tremendous benefit to the industry in the last 26 years, but I do not believe it will be in a position to do the things that must be done to improve products, and to develop and introduce new products. This will have to be a job for enterprising, financially strong packers.

We may have some rough times in marketing larger citrus crops in the next few years, but there are enough new ideas developing to make the long-range outlook good.

Cash Receipts From Citrus Down In 1960...

...By...

ZACH SAVAGE
AGRICULTURAL ECONOMIST
AGRI. EXPERIMENT STATIONS

Cash receipts from farm marketings of oranges, grapefruit, tangerines, tangelos and limes in Florida were $276 million in the calendar year of 1960. This was a decrease of 19 percent over 1959. Receipts from these five kinds of citrus in 1960 were $111 million more than for vegetables with potatoes, sweet corn and watermelons included. Receipts from citrus were $66 million more than receipts for livestock and livestock products. Citrus receipts were five times the receipts from field crops in 1960 and more than five times the combined receipts from greenhouse, nursery and forest products and other fruits and nuts. (See Table 1.) Cash receipts from all Florida farm marketings were $761 million in 1960 and $808 million in 1959. This was a decrease of 6 percent.

Receipts from oranges in 1960 decreased 20 percent from 1959 and grapefruit receipts decreased 15 percent. Changes in cash receipts by group of products in Florida and the United States between 1959 and 1960 are shown in Table 2.

The decrease in receipts from the five kinds of citrus in Florida was 19 percent and in the United States 13 percent in 1960 over 1959. The increase outside Florida was one percent. All products other than citrus taken together increased 4 percent in Florida and increased 2 percent in the United States.

Cash receipts from these five kinds of citrus were 36 percent of the Florida total for all farm products in 1960 and 42 percent 1959. Of the 11 groups of products shown in Table 1, oranges ranked first in receipts in Florida during 1959 and in 1960. Receipts from oranges constituted 82 percent of the receipts from the five kinds of citrus in Florida in 1959 and 90 percent in states other than Florida. The proportions in 1960 were 81 percent and 90 percent, respectively.

Oranges by States

Of the cash receipts from oranges in the United States, 68 percent were received by Florida growers in 1959 and 63 percent in 1960. (See Table 3.) Florida and California growers received 98 percent of the total in 1959 and 96 percent in 1960. Receipts in Florida decreased 20 percent between these seasons, California decreased 3 percent. Arizona increased 196 percent. Texas increased 3 percent and Louisiana increased 6 percent.

Grapefruit by States

Florida received higher proportions of the United States cash receipts from farm marketings of grapefruit in each of these seasons than from oranges. Florida's share of the grapefruit money was 78 percent in 1959 and 75 percent in 1960. (See Table 4.) Receipts in Florida decreased 15 percent between 1959 and 1960, California decreased 24 percent, Texas increased 25 percent, Arizona increased 15 percent and all states other than Florida increased 5 percent.

Tangerines, Tangelos and Limes

All commercial tangerines and tangelos were produced in Florida. Limes were produced commercially in two states, Florida and California. Florida receipts for limes in 1960 were 95 percent of the total and 94 percent in 1959. Florida receipts from limes decreased 11 percent between

Table 1. Cash Receipts on Florida Farms, 1960 and 1959

	1960		1959	
	1,000 Dollars	Percent	1,000 Dollars	Percent
Oranges	224,070	29.5	278,636	34.5
Livestock and Livestock Products	210,472	27.7	218,742	27.1
Vegetables (including Potatoes, Sweet Corn and Watermelons)	165,403	21.7	147,798	18.3
Field Crops	55,913	7.3	48,691	6.0
Grapefruit	41,682	5.5	48,915	6.1
Greenhouse and Nursery	37,655	4.9	36,106	4.5
Forest Products	13,419	1.8	12,293	1.5
Tangerines	6,866	0.9	10,803	1.3
Tangelos	2,595	0.4	2,246	0.3
Limes	877	0.1	987	0.1
Other Fruit and Nuts	1,868	0.2	2,444	0.3
TOTAL	760,820	100.0	807,661	100.0

Table 2. Percentage Change in Cash Receipts in Florida and United States Products From 1959 to 1960

	Florida Percent	United States Percent
Oranges	Decreased 19.6	Decreased 13.3
Liveestock and Livestock Products	Decreased 3.8	Increased 0.3
Vegetables, Including Potatoes, Sweet Corn and Watermelons	Increased 11.9	Increased 11.1
Field crops	Increased 14.8	Increased 2.7
Grapefruit	Decreased 14.8	Decreased 10.4
Greenhouse and Nursery Products	Increased 4.3	Increased 4.3
Forest Products	Increased 9.2	Increased 3.7
Tangerines	Decreased 36.4	Decreased 36.4
Tangelos	Increased 15.5	Increased 15.5
Limes	Decreased 11.1	Decreased 11.3
Other Fruit and Nuts	Decreased 23.6	Increased 4.6
All Products other than Oranges, Grapefruit, Tangerines, Tangelos and Limes	Increased 4.0	Increased 1.9
All Farm Products	Decreased 3.8	Increased 1.7

these two seasons, while those of California decreased 14 percent.

Oranges, Grapefruit, Tangerines, Tangelos and Limes by States

Florida growers received 71 percent of the cash receipts from oranges, grapefruit, tangerines, tangelos and limes in the United States in 1959 and 66 percent in 1960. (See Table 5.) California was second with 26 percent in 1959 and 29 percent in 1960. Combined receipts for Texas, Arizona and Louisiana were 4 and 6 percent, respectively. Florida receipts decreased 19 percent between these seasons and all states other than Florida increased one percent.

Importance of These Five Kinds of Citrus

Cash receipts from farm marketings of these five kinds of citrus made up larger proportions of all such receipts in Florida than of any of the other four states concerned. These receipts made up 42 percent of Florida receipts in 1959 and 36 percent in 1960. (See Table 6.) These sources were much less important in California, Arizona, Texas, and Louisiana. Four percent of California cash farm receipts were from these five kinds of citrus in 1959 and in 1960. Each of the other three states had less than 2.5 percent from these sources in each of these seasons.

Table 3. Cash Receipts From Farm Marketings of Oranges by States

State	1960		1959	
	1,000 Dollars	Per-cent	1,000 Dollars	Per-cent
Florida	224,070	63.4	278,636	68.4
California	116,802	33.0	120,528	29.6
Texas	5,680	1.6	5,494	1.3
Arizona	6,056	1.7	2,046	0.5
Louisiana	901	0.3	850	0.2
United States	353,509	100.0	407,554	100.0

Table 4. Cash Receipts from Farm Marketings of Grapefruit by States

State	1960		1959	
	1,000 Dollars	Per-cent	1,000 Dollars	Per-cent
Florida	41,682	74.6	48,915	78.4
Texas	7,211	12.9	5,754	9.2
California	3,790	6.8	4,956	8.0
Arizona	3,193	5.7	2,771	4.4
United States	55,876	100.0	62,396	100.0

Table 5. Cash Receipts From Farm Marketings of Oranges, Grapefruit, Tangerines, Tangelos and Limes by States

State	1960		1959	
	1,000 Dollars	Per-cent	1,000 Dollars	Per-cent
Florida	276,090	65.8	341,587	70.6
California	120,642	28.7	125,542	25.9
Texas	12,891	3.1	11,248	2.3
Arizona	9,249	2.2	4,817	1.0
Louisiana	901	0.2	850	0.2
United States	419,773	100.0	484,044	100.0

Table 6. Proportion Cash Receipts From Farm Marketings of Oranges, Grapefruit, Tangerines, Tangelos and Limes of All Farm Commodities by States.

State	1960 Percent	1959 Percent
Florida	36.4	42.3
California	3.8	4.1
Arizona	2.1	1.2
Texas	0.6	0.5
Louisiana	0.2	0.2
Total 5 States	6.0	6.9

Source: Adapted from State Estimates of Farm Income, August 1961. A supplement to the July 1961 issue of The Farm Income Situation, USDA.

USDA Issues Rail Transportation Manual For Produce Shippers

Ways to maintain the quality of fresh fruits and vegetables during rail shipment, so as to deliver high quality products to the consumer, are described in a handbook issued today by the U. S. Department of Agriculture.

Fresh produce deteriorates quickly in transit if rail cars are not properly refrigerated or heated. The railroads have made available to shippers many kinds of protective services and equipment, such as mechanical or ice refrigeration, heaters, fans, and means for precooling. These services are designed to provide and maintain a satisfactory environment for produce in rail cars and reduce losses due to decay, overripening, or chilling injury.

Marketing researchers of USDA's Agricultural Marketing Service have compiled the handbook descriptions of the services available, together with recommendations for their use. Included are discussions of containers and loading, methods of precooling, and formulas for calculating the refrigeration load.

Shippers of all the major fruits and vegetables can find in the handbook information to help them select the best and most economical protection for their commodities. The handbook considers the requirements of individual products, seasonal needs, geographical location, and cost.

Most of the recommendations are based on transportation studies conducted by USDA. For certain crops not thoroughly studied by the Department, commercial practices have been evaluated and tentatively recommended in order to provide more complete coverage of all important fruits and vegetables.

Electricity and Firearms each are involved in about eight percent of the fatal farm accidents. Ordinary common sense and precautions will enable you to enjoy electricity to the fullest in a safe manner. Do not be afraid of electricity but treat it with respect.

The Outlook For Citrus In The 60's

DR. W. E. BLACK
DIRECTOR, ECONOMIC AND MARKETING RESEARCH
FLORIDA CITRUS COMMISSION

(Talk given at the 28th Annual Citrus Institute, August 9, 1961)

When we consider outlook, most of us are asking "Where will we stand next year?" There is both a short-term and a long-term outlook for Florida citrus and, at this time of the year, prior to Charlie Townsend's crop estimate, the short-term outlook is the more difficult. The size of the crop affects the quantity to be offered for sale, and quantity, in turn, affects price. We also know that in the instance of frozen orange concentrate, 92% of the variation in consumer purchases are directly associated with variations in price. [1]

Nonetheless, something can be said about the short-term outlook. The following brief outlook statement for the 1961-62 crop was prepared by the Commission and Mutual for a recent Chicago convention:

"The 1961-62 Florida citrus outlook is good. It is still too early to be specific regarding next year's Florida citrus production. Florida anticipated a 100 million box crop last year, but Hurricane Donna reduced it to 87.0 million boxes. Following bloom, Florida anticipated the magic 100 million box 1961-62 orange crop, but as of now, due primarily to prolonged dry weather, the outlook is for a crop under that figure, but larger than last year. Also anticipated is a crop of earlier maturity, giving a longer marketing season.

"Our June outlook calls for a larger Florida grapefruit crop next year. Since one-half or more of the nation's crop will be marketed fresh, you can expect grapefruit to offer continuing volume competition to other fresh fruits in the market.

"Tangerines, which are almost wholly produced in Florida, will be substantially down from the past season's 5 million box production. The 1961-62 crop will mature much earlier than last year, permitting volume sales in the holiday seasons and normal tangerine demand months."

Now let's look at supply, utilization and demand in the long term outlook.

Supply

Acreage. The total U. S. citrus acreage has hovered around 800,000 acres during the past few years. This is approximately 50,000 less than it was at its peak in 1948-49. The outsider may interpret this fact to mean that maximum acreage growth has been reached. Nothing could be further from the truth. Many of us will live to see a million acres of citrus in the United States. The high prices now and in recent years encourage new plantings, better grove care, and increased fertilization. Growers will continue to increase acreage and production so long as on-tree prices exceed cost of production. We will always have land for citrus so long as fruit prices are good.

In the past 10 years Florida has expanded acreage 28% in spite of the 1957-58 freezes which stymied acreage expansion by three years. California acreage, on the other hand, decreased 32% in the last ten years, due primarily to rapid residential and industrial development which competed directly for land usage. But with the prevailing favorable economic climate in the citrus industry, and added water availability, new plantings and relocations will push California's future acreage upward.

Texas acreage dropped from the pre-freeze level of 122,000 acres to 35,000 acres in 1951-52. Texas acreage is now over 70,000 and moving up fast. The Arizona acreage dropped to 13,600 acres today from a peak of 21,000 twenty years ago. This area has also been hampered by residential and industrial development, but some upturn is forecast. In the other areas, notably Louisiana, acreage has held steady at about 4,500. It is of more than passing interest that 41% of Florida acreage is under 10 years old, in Texas 45% is under 10 years old, and in California 26% is under 10 years old.

Production

Total U. S. citrus production has been just below 200 million boxes, never having reached this mark. Florida increased production sharply in the thirties, forties and fifties, reaching its all time peak of nearly 139 million boxes in 1953-54. Although Florida has increased its acreage since then, production has been plagued by the elements, notably the 1957-58 freezes and last year's Hurricane Donna. Because Florida and U. S. citrus production have leveled off, there are those who say that marketing will never be a problem again.

The argument given is that some form of weather adversity will always plague the industry. Certainly, citrus in Florida, as elsewhere, has been affected by hurricanes, freezes and rain, or the lack of it. But this industry cannot hope to prosper on calamity alone. Weather adversities differ as to type and intensity each year and this fact creates one important influence on marketing — the year-to-year variations in supply. In reality, this industry has economic and marketing problems each year, not only in "good" weather years. Our job is to face up intelligently to our marketing challenges and meet them sensibly.

In spite of the temporary leveling off of Florida citrus production, our present production capacity is increasing. With favorable climatic conditions, under prevailing cultural practices and tree age, Florida could have produced 100 million boxes of oranges, 42 million boxes of grapefruit and 5 million boxes of tangerines, or a total of 148 million boxes, last season. Actual total production was 124 million boxes. With favorable weather, that is without Hurricane Donna, Florida's citrus production would probably have been 20% bigger, according to USDA estimates. Any projection of future citrus supplies in Florida must be made from the 148 million box figure and not from the 124 million box figure.

If production in the next 10 years increases as in the past 25 years, then we could logically expect 135 million boxes of oranges in Florida in 1970, provided we have no major calamities. This is based on projected acreage and bearing surface. Of course, if we receive substantially lower prices and cut back our cultural practices and fertilization, the total orange production in 1970 will be less than 135 million boxes.

Production increases in Florida in the decade ahead will be in oranges, including Temples, not grapefruit or

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[1] Henderson, Peter L. and Brown, Sidney E., "Effectiveness of a Special Promotional Campaign for Frozen Concentrated Orange Juice." Mkt. Res. Rpt. No. 567.

THE OUTLOOK FOR CITRUS IN THE 60's

(Continued from Page 14)

tangerines. Florida's grapefruit production will probably drop slightly from the 1953-54 peak, and the 1970 production capacity should be about 40 million boxes, unless there is an early breakthrough in new processing technology. Tangerine production capacity in 1970 will be similar to that of the past decade, or 5 million boxes. In 1970, therefore, Florida could produce 180 million boxes of oranges, grapefruit and tangerines, or a volume greater than was produced in all U. S. last year.

Increases in production will also occur in other U. S. production areas. California's orange production jumped from 37 million boxes in the thirties to 48 million in the forties. Its fifties production dropped back to 37 million boxes for reasons previously stated. Recent rates of plantings suggest that production by 1970 in California and Arizona will be 37 million boxes of oranges (with new production just about offsetting future losses to residential development). The combined production of grapefruit for the two states will remain at nearly 5 million boxes in 1970.

Texas production has moved from ½ million boxes in the freeze years (1951-52) to 10 million boxes last year. That volume was still a long way below the pre-freeze level of 28 million boxes. Texas orange production could be 11 million boxes and its grapefruit production 14 million boxes in 1970. Orange production will make up a higher proportion of total Texas production than before the freeze.

The total U. S. production capacity for oranges, grapefruit and tangerines in 1970, therefore, will probably exceed 240 million boxes. The very favorable economic climate now prevailing in citrus is the thing that should propel the crop size to this unprecedented high level in 1970. In order to bring this figure into proper perspective, you must bear in mind that last year's combined production of these three fruits was 166 million boxes.

The U. S. 1970 production, therefore, could be 49% greater than the 1960-61 crop. Florida is apt to increase its production above last year's levels 45%, California and Arizona, 49%, and Texas, 150%. Florida growers will account for three-quarters of the next decades' U. S. citrus production growth. Another interesting development is that aside from the grapefruit expansion in Texas, all production growth will be in oranges.

Citrus growers in the years ahead will grapple with marketing problems primarily. We should, by all means, proceed with new variety and quality production experiments, and especially new product development and improvement. This type of research will pay big dividends. But the mounting supplies will bring into focus the problem of increasing consumption rates, and, therefore, the need for more marketing and economic research than in the past.

We will need to spend more money on this type research in order to meet the marketing challenges of the future, to safeguard our citrus investments and to remain competitive. We cannot shun our research responsibilities since three-quarters of the U. S. citrus production expansion will occur in Florida.

World Production

The world production of citrus is increasing faster than United States production or the Florida production. The U. S. accounted for 48% of the world production in 1951-55 compared with only 40% in 1959-60. Florida's share of the world citrus volume has slipped from 31% to 26% between these years. Our competition in foreign markets will be more intense, not less, in future years, especially from Mediterranean area suppliers. There will be further expansion in the production of competitive processed citrus products in foreign production areas, and this will further affect our ability to sell in foreign markets.

Utilization

Before we get into the demand side of citrus, let's look for a moment at the changes in crop utilization.

Oranges. The shift in orange utilization has been toward processing. However, this shift has not been at the same rate in all producing areas. Florida led other producing areas and has gone further in changing over from a fresh fruit industry to a processing industry. In the last 5 years, over three-fourths of the Florida orange crop has been processed.

More California oranges are processed now than thirty years ago, but three-fourths of their crop still goes to market in fresh form.

Texas was on the way toward heavier processing utilization but its trend was reversed temporarily by the 1951 freeze. In the last 5 years, just under one-fifth of the Texas orange crop was processed.

The shift toward processing has leveled off in California and Texas in recent years, while the shift toward still heavier processing utilization continues in Florida. About 85% of next year's Florida commercial crop of oranges will be processed. As production in Texas picks up, we can also expect expanded processing utilization there.

Recent trends in consumption suggest that all future increases in orange production will be utilized in processed form.

Grapefruit. The shift toward processing of grapefruit has not been as marked as for oranges. Also, utilization has appeared to level off at near equal proportion between fresh and processed.

The grapefruit crops in the next decade will continue to be utilized almost equally between fresh and processed forms, unless we make a major breakthrough in new processing technology. To continue this equal division we will need to take full advantage of existing processing technology improvements.

Review

So far I have said that:

1. Citrus production in the U. S. could be 49% greater in 1970 than this year.

2. Eighty percent of the production increase will be in oranges. Added grapefruit production will occur only in Texas, while tangerine production will, in all likelihood, remain steady.

3. Florida will account for three-fourths of the increased production.

4. Since most of new orange production will be processed, lesser proportions of the nation's orange crop will be marketed fresh, while, without a major new technological breakthrough, grapefruit will continue to be equally divided between fresh and processed.

Demand

When we consider demand, we are asking "What will consumers buy?". In view of my projected supply increase, the future of demand is especially important to the citrus grower.

Three alternatives are available to the citrus industry for increasing the sale of citrus: (1) winning back old users and use rates, (2) inducing more people to eat it, and (3) inducing existing consumers to consume greater quantities.

Winning back old users and use rates. What is the marketing job ahead for oranges? In order to crystalize the problem I must resort to some figures again. The supply of oranges in 1970 will be 52% greater than today, compared with a 49% increase for all citrus. We also know that the per capita consumption rate for oranges had increased until the last major freeze.

The highest rate of orange consumption was reached in 1954-55, when it

(Continued on Page 18)

FLORIDA ORTHO® CITRUS SPRAY PROGRAM

Dormant Spray *(December 20 to February 10)*

ORTHO Nutritional S-C-Z-Mn-B Spray No. 2	**Dosage:** 60 lbs./500 gals.	**Controls:** Citrus Rust Mite, Scab, Melanose, Copper, Zinc, Manganese, Boron Nutrition—Yellow Spot
ORTHO Sodium Molybdate	**Dosage:** 5 ozs./500 gals.	
ORTHO Spray Sticker	**Dosage:** 40 ozs./500 gals.	

Note: ORTHO Spray Sticker has proven especially beneficial in sticking nutritional sprays.

Post Bloom Spray *(from ⅔ petal fall until fruit reaches ½" in diameter)*

ORTHOCIDE 50 Wettable	**Dosage:** 10 lbs./500 gals.	**Controls:** Fruit Set, Foliage Growth, Melanose, Scab, Black Scale, Florida Red Scale, Purple Scale, Citrus Rust Mite, Fruit Russet, Citrus Red Mite, Texas Citrus Mite, Six Spotted Mite, Aphids, Mealybugs, Fruit Worms
ORTHO Parathion 8 Flow Concentrate	**Dosage:** 20 ozs./500 gals.	
ORTHO Zineb 75 Wettable	**Dosage:** 3 lbs./500 gals.	
ORTHO Trithion 4 Flowable or		
ORTHO Ethion 4 Flowable	**Dosage:** 40 ozs./500 gals.	
ORTHO Spray Sticker	**Dosage:** 40 ozs./500 gals.	

Note: In recent years, minor pests, including Aphids, Mealybugs, Fruit Worms, Black Scale, have become increasingly important to control. Parathion in the post bloom spray prevents the build-up of these pests. If preferred, ORTHO Malathion may be substituted.

Summer Spray *(July 1 to July 31)*

FLORIDA VOLCK Soluble Spray	**Dosage:** 5 gals./500 gals.	**Controls:** Florida Red Scale, Purple Scale, Black Scale, Citrus Red Mite, Texas Citrus Mite, White Fly, Sooty Mold, Greasy Spot, Citrus Rust Mite, Fruit Russet
ORTHO Zineb 75 Wettable	**Dosage:** 5 lbs./500 gals.	

Note: Check with your local ORTHO Fieldman for other available phytonomic oil sprays. Florida Red Scale is best controlled between July 15 and July 31. If the interval between the Post Bloom Spray and the Summer Spray is extended to an aerial application of ORTHO Trithion 4 Flowable or ORTHO Trithion – Sulfur dust formulations may be needed for control of rust mites and spider mites prior to the Summer Spray.

Fall Spray *(October 1 to November 15)*

ORTHO Tedion® 25 Wettable	**Dosage:** 2½ lbs./500 gals.	**Controls:** Citrus Red Mite, Texas Citrus Mite, Fruit Russet
Chlorobenzilate 25 Wettable	**Dosage:** 2½ lbs./500 gals.	
ORTHO Spray Sticker	**Dosage:** 40 ozs./500 gals.	

Note: In groves where greasy spot is a problem, protection of the late summer-early fall flush may be necessary. ORTHO PHALTAN 50 Wettable and ORTHO Copper 53 Fungicide combined with ORTHO Spray Sticker are recommended for this use. Consult your local ORTHO Fieldman for information on the proper rates and timing.

Florida growers acclaim ORTHO products in the ORTHO program

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THE OUTLOOK FOR CITRUS IN THE 60's

(Continued from Page 16)

was 61 pounds per capita. The indicated rate of consumption last season, because of the short crop, was 51 pounds, in all forms, per capita. About 40% of the expected increase in orange supplies, therefore, will be absorbed by regaining the previous high rate of orange consumption. This then leaves 60% of the supply increase to be absorbed by population growth and righer rates of consumption.

New users. U. S. population growth can, at the 61 pound per capita consumption rate, absorb 2.5 million boxes of oranges per year. Growth in population, therefore, would take up another 40% of the contemplated increase in orange supplies. These two factors, regaining the 1954-55 consumption rate and new population, will therefore absorb four fifths of the greater orange supplies to be produced in 1970.

Inducing existing consumers to consume more. The remaining one-fifth or about 14 million boxes must be absorbed by U. S. and Canadian consumers using more oranges. We can also increase exports to Europe which will result in more people eating more Florida oranges, but the possibility of significant increases in foreign trade will depend to a large extent on the degree of resistance created by common market tariffs and competitive supplies and prices. After making allowances for regaining old consumption rate and population growth, the U. S. per capita consumption rate will need to be increased by 6 pounds (on fresh weight equivalent basis) in order to utilize the total orange supply in 1970.

This will mean a 1970 consumption rate of 67 pounds per capita which appears likely because the potentials in frozen orange concentrate and chilled juice consumer purchases are still great, and because of further anticipated increases in per capita disposable real income. Most of the growth will come in frozen orange concentrate, chilled juice, or possible new uses. We are selling orange concentrate to only 30% and chilled juice to only 5% of the American families in any one month so our target is still big. Canned single strength juices hold little promise for significantly increasing per capita consumption rates and fresh consumption depends primarily on quality of future offerings and competition from other fruits and products. In brief, the demand outlook for oranges is good.

Grapefruit. Grapefruit per capita consumption in the last few years has hovered at almost 17 pounds (fresh basis). Per capita consumption of fresh grapefruit has held steady, while canned single strength grapefruit juice has been halved in the last decade. The long term trend for grapefruit consumption has been down.

The expected increases in Texas (and this is the only U. S. area increasing) grapefruit production will be somewhat greater than will be offset by increases in population alone. The likelihood of achieving higher per capita rates of consumption is dim under present processing technology. On the other hand, exports to European markets of grapefruit hold a better promise than for oranges. If the export market drains off another ¼ million boxes of grapefruit each year, and present domestic consumption rates are maintained, then the grapefruit marketing picture will remain much as it is today.

It is significant to note that we shipped more fresh grapefruit than fresh oranges last season, for the second time in history. In spite of this, grapefruit is still a problem, and the industry is turning more and more attention to the marketing of this fruit. Mutual, in its June 30, 1961 "Triangle" said: "Now is the time to take aggressive, constructive action on marketing and promotional programs for grapefruit." The Commission will be giving special attention in its advertising, merchandising and marketing and product research to the opportunities for selling greater volume. Costs will need to be kept low in order to compete successfully in the market. New product development will need to be emphasized, and quality improvements made in old products.

Any projection made of the future market situation for citrus must be tempered by the possible occurrence of hurricanes or freezes in Florida, or other producing areas. The years won't all be high supply and low price, or vice versa, because weather adversities will occur. Returns on citrus groves will continue to average higher than for other types of farming during the next decade.

We must always keep in mind the rigorous nature of inter-regional and world competition for citrus markets. Furthermore, whether we like it or not, there is competition from other commodities. The apple people saw their per capita consumption slip away because they felt apples had no competition from other commodities.

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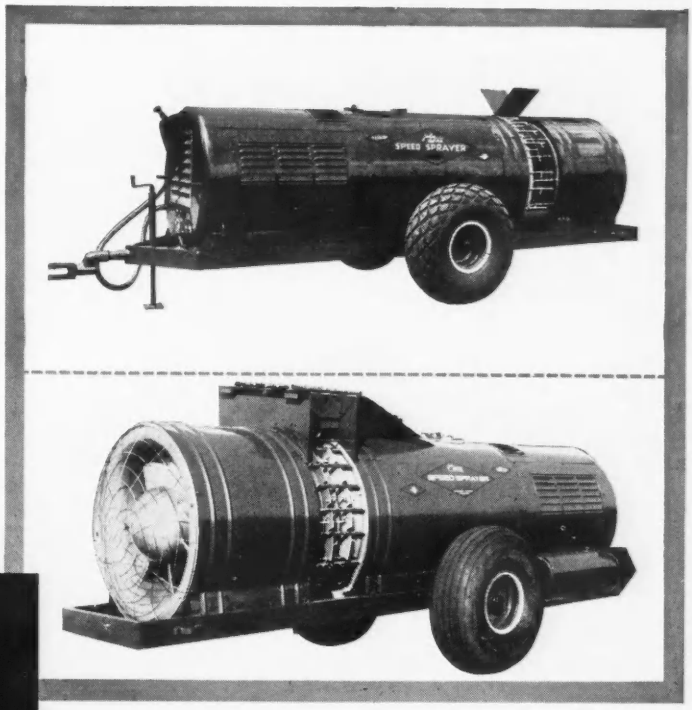

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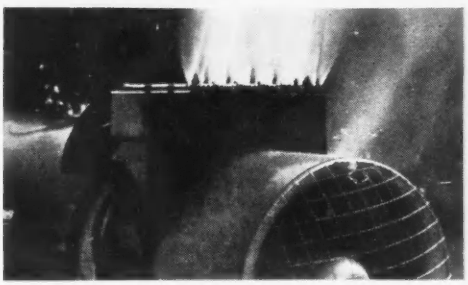

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. . . BY . . .

ARTHUR K. BURDITT, JR.

ENTOMOLOGY RESEARCH DIV.
AGRIC. RES. SER., U.S.D.A.
ORLANDO, FLORIDA

Paper presented at Camp McQuarrie August 10, 1961

This afternoon I will discuss some new approaches to insect control. Mr. Selhime has discussed some approaches using biological control; I shall include a number of other methods. Many of these methods are not new to research people. Entomologists, geneticists, and chemists from the Entomology Research division of the United States Department of Agriculture and other Federal, State, and private organizations have been working on basic research on them for over 30 years.

However, until a few years ago, the use of these methods was not feasible because of technological difficulties. Other methods that I shall mention are new, and are still in the theoretical or preliminary phases of development.

Preliminary studies on some of these approaches to insect control showed that the methods were promising. Muller (1928) and others found that X-rays could be used to cause development of mutations in insects. At higher dosages, these X-rays prevented hatching of insect eggs. Studies by Headlee and Jobbins (1936) showed that radio waves could be used to destroy insects by heating the medium to a lethal temperature.

Mitlin and his coworkers (1957) found that some types of chemicals could interfere with reproduction of house flies. These are but a few of the studies conducted over the past few decades to determine the feasibility of nonconventional methods of insect control.

During this recent period, technological improvements were made in many fields. With the developments in atomic energy new avenues were opened that led to the use of radioactive chemicals in sterilizing or killing insects and as tracers to follow metabolic changes in insects. Methods were developed for raising many species of insects in large numbers under controlled laboratory conditions.

Studies of chemical structure showed that many naturally occurring compounds could be manufactured synthetically commercially. Theoretical studies undertaken showed that at least some of the exotic approaches to insect control were feasible and that they might even be more efficient than conventional techniques (Knipling 1955, 1960).

While these studies were proceding, problems were arising from the use of new insecticides developed during and soon after World War II. Many of these materials were found to be highly toxic to man, animals, and beneficial species of insects. A few had long-lived residues that persisted after harvest and could be detected in milk or fat of animals eating crops treated with the materials.

Some insects, and mites, especially those with short life cycles, were developing resistance to many of the new chemicals, and this resistance was inherited by their offspring. Insects and mites that previously had not been pests were becoming of economic importance because populations of other species that previously had provided competition for food, and predators and parasites that had been successfully holding them in check, were greatly reduced by the insecticides. These factors stimulated research studies on new approaches to insect control.

Dr. Knipling (1960) recently published an article summarizing his thoughts on four methods of using insects for their own destruction. These methods were:

1. Release of insects that had been sterilized by gamma radiation or by chemicals.
2. Use of chemicals as sprays or in baits to induce sterility in natural populations of insects.
3. Release of insects with genetic factors unfavorable for survival in nature.
4. Release of diseased insects to aid in spread of pathogenic organisms in natural populations of insects.

The first method was used recently by veterinarians and entomologists of the U. S. Department of Agriculture and Florida Livestock Board to eradicate the screw-worm from Florida. Large numbers of screw-worm larvae were raised in a former airplane hangar in Sebring that had been converted for rearing these flies. The fly pupae were exposed to gamma radiation from radioactive cobalt.

Exposure to radiation caused mutations in the chromosomes of the sperm and eggs which prevented development of the embryo. The sterilized flies were released throughout the State in large numbers, greatly exceeding the original native population. The sterilized males would search for and mate with native females who then either did not produce any eggs or produced eggs that did not hatch. The screw-worm campaign was a success, and in less than 2 years the release of sterilized screw-worms had eradicated this pest from the southeastern states.

Knipling (1955) pointed out some of the factors that could determine if an insect control program by means of the release of sterilized flies would be successful. These were:

1. An economical method of rearing insects must be developed.
2. The insect to be used must disperse readliy so that the sterilized males may find the native females.
3. The method of sterilization must not cause adverse effects on behavior or longevity of the sterilized males that would place them at a disadvantage to the natural population of males.
4. The sperm from sterilized males must be able to compete with sperm from native insects if the females mate more than once.
5. The insect population must be low enough to permit flooding with excess populations of sterilized insects.

Our scientists have been studying this method for controlling several species of insects during the past few years. Studies in Hawaii (Steiner and Christenson 1956) have shown that fruit flies could be sterilized by methods similar to those used for screw-worms.

Knipling (1955) also suggested that other methods of sterilizing insects should be investigated. Chemicals could be used in place of irradiation or in the field to sterilize natural populations of insects. Mitlin (et al, 1957) evaluated the activity of four chemicals that were known to affect mitosis in some species of animals. Three of the chemicals prevented normal

development of the ovaries and caused sterility of female house flies.

None affected fertility of male flies, nor were they effective against adults when fed to immature stages. Screening programs are underway or are planned at several Entomology Research Division laboratories to evaluate the action of many hundreds of chemicals as sterilants and as insecticides.

Geneticists working with "Drosophila" and other species of insect have found many mutations that could be perpetuated under laboratory conditions, but would be lethal in nature. It might be possible to rear large numbers of such insects in the laboratory and release them in nature. Under certain conditions, these mutations could then be bred into the wild population and result in a decrease in the survival potential of the insect. Some examples of such mutations are inability to dispause, or inability to fly (Knipling 1960).

Mr. Selhime has mentioned possible release of insects to spread pathogenic organisms.

In addition to the four methods mentioned in Knipling's recent (1960) paper, there are numerous other approaches to insect control that are being evaluated. Some have already been mentioned by Mr. Selhime. Others are:

1. Use of hormones or other chemicals that will prevent diapause, prevent pupation or emergence, or cause premature pupation or emergence.
2. Use of antibiotics to kill species of protozoa or other forms of life that are essential for growth and survival of an insect species.
3. Use of poison-bait sprays that will attract and kill specific insect pests.
4. Use of other types of radiation, such as ultraviolet, infrared, radio or sound.
5. Modifications of microclimate, such as humidity, temperature, acidity, salinity, and other factors.
6. Breeding host material for resistance to insect pests.
7. Biological control with insect pathogens, as mentioned by Mr. Selhime.

Mr. Selhime and I have attempted to outline for you some of the experimental approaches to insect control that are now being studied. A few of these approaches have proved successful in certain phases of insect control. Others are still in exploratory stages of development. Some of the techniques mentioned may never prove practical. However, many others have been or shortly will be evaluated in field experiments, and may be available for practical insect control within the next five to ten years.

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USE SEAT BELTS FOR DRIVING AND SURVIVING

Safety belts in your car can mean the difference between being slightly jarred and being tragically scarred —or worse.

"Your chances of surviving an auto collision are eight times better with seat belts than without," reports A. M. Pettis, safety specialist with the Florida Agricultural Extension Service. "Properly installed and consistently used, seat belts also improve greatly your chances of avoiding injury in case of a traffic accident."

Pettis joins with the National Safety Council in urging all drivers to use safety belts—and be more sure of surviving to keep driving.

Production As Affected By Proper Irrigation

. . . By . . .

LOUIS W. ZIEGLER
PROFESSOR, FRUIT CROPS
UNIVERSITY OF FLORIDA
GAINESVILLE, FLORIDA

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The production program is essentially a schedule of those operations which go into the development of a profitable citrus crop. Each of the operations must be analyzed independently with regard to its economic value. Such an analysis is comparatively easy when considering the fertilization program, as the sands of Florida are relatively infertile and intelligent applications of plant food elements always result in increased yields.

Such an analysis is not so easy when considering the irrigation program. Crop production is possible without irrigation for Florida is located in the southeastern humid belt and receives an average of 52 inches of rainfall per year. Therefore, irrigation cannot be considered as an obligate program, but rather as a supplemental one.

In such a program the manager is of necessity simply augmenting the water supply when either the total rainfall or its distribution from month to month appears to be inadequate for the full functioning of the citrus tree. Poorly-timed applications may lead to no increase in yields but definite increases in costs per unit of production. Irrigating in some periods even appears to reduce yields. Necessarily, then, a great deal of planning must go into this program.

Because of the many varying results from the use of irrigation in Florida, many growers have looked to better control of their cultivation program to eliminate as far as possible the need for irrigation. In the reduction of weed and covercrop growth, moisture is conserved by such cultivation. It is therefore a wise move to cut down covercrops when water is becoming deficient in the soil. However, when there is a necessity for the replenishment of the water supply in the soil, cultivation is of little or no value. Florida soils are of single-grain structure by nature which require no cultivation to maintain tilth.

Some growers have felt that irrigation will lead to the shallow rooting of their trees. This apparently does not occur. Water percolates freely through most Florida soils and it is rare that more than 10% additional water is given through irrigation than is received through rainfall. The normal fluctuations of rainfall are of far greater magnitude than this.

Irrigation will not be required in every year since each year presents a slightly different picture of rainfall distribution and rainfall totals. This, in itself, has led to many of the problems of the irrigation operation. Simply because irrigation equipment is at hand is not sufficient reason for indulging in the operation. It is fallacious reasoning to consider regular monthly applications regardless of the rainfall pattern, and it is even poorer reasoning which leads to the usage of the equipment simply because it is on hand.

Irrigation equipment is expensive and its operation further increases the expenses. Because of this expense many growers undercapitalize the equipment . . . that is, they consider that the equipment is satisfactory for many more acres than it will actually take care of. It would appear that a portable or stationary pump delivering 400-500 gpm, with proper feeder and distribution lines will handle 75 acres under any weather conditions, while a pump delivering 800-1000 gpm will take care of 150 acres. Ideally, then, such equipment will be operated more cheaply as it approaches its maximum efficient operating load. This load is figured upon the ability to water all acreage within a 15-day period, with no night operations. Loading equipment beyond this point places greater responsibilities upon management.

If a grower has irrigation equipment, by what methods can he derive greatest effectiveness from its operation? Here one must enter the realm of reasoning without all the data which might be wished for. Some of this reasoning is backed by research, parts by practical experience, and parts by no positive values.

Irrigation should be applied in the fall only in cases of dire need when fruit is shrivelling and dropping, or when trees are wilting to the point of leaf loss. The fall period is normally one of low growth activity in the tree. Dormancy, which is to be encouraged, is approaching.

During the spring period, however, the tree is in a normal "pushing" cycle. It is in this period when there is more chance of returning a profit from the irrigation operation. During this period the tree should not be allowed to go into a permanent wilt, i.e., a wilt of the foliage which remains around the clock.

At the present time there is no easy guide as to the time when the soil moisture should be replenished. Certainly, it is not reasonable to simply supply water because it is felt that one should keep the water supply of the soil fully charged at all times. It has been shown that the condition known as "temporary wilt" is the best guide now available to indicate the approaching need for water replenishment.

Temporary wilt is that condition which sets up a wilt in the leaves in the early afternoon due to excess transpirational losses over absorption when the soil moisture is approaching the "permanent wilting point". Since trees will show a "temporary wilt" for from two days to three weeks before entering "permanent wilt", depending upon humidity and wind conditions, notice of need for irrigation is not always timely from the standpoint of beginning operations.

However, certain groves will wilt before others. Old groves (particularly of grapefruit), groves planted on close spacings, and groves on shallow soil

will show temporary wilt prior to others. These types of groves should be inspected during the spring months from time to time for detection of first evidence of wilt. It may be that such groves are under the management of others . . . they still will be useful as a guide.

Few inspections are needed during the fall and winter months. The months of February through May require the most attention. Need of water is great at this time due to increments of new foliage, active fruit development, high temperatures, and drying winds. The need becomes even more critical when the spring period follows a dry fall.

Rainfall records are valuable guides to determination of importance of inspections. In dry periods more inspections should be made, while they become less important in seasons of well-distributed rainfall. Inspections should be made during the mid-afternoon when the trees will show any moisture stress. Early in the morning or late in the afternoon, when the trees may be in a turgid condition even under low soil moisture conditions, are not satisfactory for these inspections.

Research would indicate that irrigation applied when the tree has reached a temporary-wilted condition is worthwhile. There is, however, the problem of reaching all groves prior to the setting in of permanent wilt. This is one of the reasons for limiting irrigation equipment to a fifteen-day run. (The other is due to the necessity in extreme droughts to re-irrigate the same groves after a two-week period.)

Management must assume the responsibility to have equipment ready and in running order at the time of need. Other jobs such as fertilization and spraying must be re-routed. Labor must be available and properly organized. Useless layouts of pipe must be avoided. Groves must be irrigated in somewhat the order of need, although, because of pipe layout, this may not always be possible to the fullest extent.

How much water should be applied per irrigation? Citrus roots ramify a deep well-drained soil to considerable depth. However, the effective rooting depth, i.e., that depth in which the major portions of the roots are located, is probably a maximum of 4 feet. If one considers that at "field capacity" such a soil can hold about one inch per foot depth, then averagely 4 inches of water are held in the four-foot depth.

As the soil dries out a portion of water is held back by greater forces than can be overcome by plant roots. Let this be considered as one-fourth of the field capacity. Then, as the plant approaches wilting the soil to a four-foot depth could utilize 3 inches of water. Satisfactory irrigation applications therefore must consist of from 2 to 3 inches of water for this type of soil.

If a grower decides that he must rush the job and apply less than these average amounts, he will simply be replenishing the water supply in the upper portions of the soil, those portions which are highly affected by surface evaporation. Under such a condition, this grower is hardly doing a sufficient job to expect any results . . . actually a large part of the effective rooting depth is remaining dry.

On the other hand, the application of larger quantities of water than 2 to 3 inches will result in percolation of the excess to depths beyond the reach of the majority of roots. Such, again, is economically not feasible.

Groves on poorly-drained or shallow soils will, because of shallow depth for rooting, require lesser amounts of water per application, but more frequent applications.

Summation: From available literature, and experiences, it would appear that irrigation is an operation which will pay dividends to the Florida citrus grower. These dividends will only be possible under the following conditions:

1. The equipment must be tailored to the grove acreage to allow effective operation within the critical period.
2. The operation must be well-planned in advance in order to effectively use equipment, power, and labor.
3. Other operations of production must be fitted into a schedule which will allow major activity in irrigation in times of need.
4. Irrigation should not be attempted in the fall except in cases of extreme conditions.
5. Irrigation should be practiced in the spring months only at the time of temporary wilt.
6. Timing of applications will be based upon study of rainfall records, and grove observations.
7. Amounts of water per application will depend upon type of soil. On the well-drained soils each application should consider 2-3 acre-inches. On other soil types amounts will need to be calculated upon depth and field capacity of the particular soil.

Twenty-Seven Years of Citrus Costs and Returns

. . . By . . .
ZACH SAVAGE
AGRICULTURAL ECONOMIST
AGRI. EXPERIMENT STATIONS

Through the cooperation of interested citrus growers, the Florida Agricultural Extension Service, which includes County Agricultural Agents of citrus producing counties, and the Agricultural Experiment Stations, have conducted citrus costs and returns studies since 1931. Some of these groves had 90 percent or more of the trees that were orange. This report deals with these orange groves. An average of 58 orange groves were included in each of the 27 seasons of 1931 to 1958.

Orange groves included were located in eight counties in 1957-58. These counties were Polk, Pasco, Lake, Orange, Highlands, Osceola, Hillsborough and Seminole. From 65 to 85 percent of these groves were in the four counties of Polk, Lake, Orange and Highlands, varying somewhat in different seasons.

Averages of date from these orange groves are not presented as averages for the entire state of Florida. Groves included in these records are those of cooperators who would supply records. These groves usually have higher yields than the average orange grove of Florida, and it is presumed fruit is produced on these groves at somewhat lower costs per box. However, it is believed that trends in averages for these groves are similar to trends in corresponding averages for all Florida orange groves of similar ages.

Total acreage in groves of all ages included in these records expressed as a percentage of the total Florida acreage of orange trees four years of age and older varied from 0.25 percent in 1931-32 to 0.69 percent in 1935-36 and averaged 0.47 percent for the 27 seasons. The proportion that the total number of boxes of fruit harvested from record groves was of the total Florida production of ranges was larger each season except two, 1952-53 and 1957-58, than the corresponding season figure for percent of acreage and averaged 28 percent more.

This indicates that the average yield for all ages of trees for the 27-year period was approximately 28 percent higher on the record groves than for the state as a whole. This comparison is made without regard to age of trees for the state as data on tree ages are not available on trees older than 15 years.

The total acreage in groves of cooperators varied from 386 in 1931-32 to 1,894 in 1952-53. The average for the 27 seasons was 1,259 acres each season.

Acreage Per Grove

Acreage per grove for the 27 seasons averaged 30 acres for the younger group and 20 acres for the older group of groves. In 1957-58 the average for groves 10 years of age and under was 51 acres per grove, 18 acres for groves over 10 years of age and 22.6 acres for all groves. Three-fourths of the groves included in this study contained less than 30 acres per grove.

The above paragraph on acreage per orange grove is based upon the grove units used in grove accounts. It is claimed by some that there are 30,000 grove units in all citrus within the State of Florida. If this is true, the 641,800 acres in Florida citrus groves in 1957-58 would amount to 21.4 acres per grove for all citrus. From these figures the acreage in orange groves included in this study averaged 1.2 acres or 6 percent larger per grove than all citrus groves of the state.

Trees Per Acre

Many calculations for large citrus acreages or for the state acreage as a whole are on the basis of 65 trees per acre of land. The acreage included in this orange grove study averaged 68 trees per acre for the young group, 65 for the older group and 66 for both groups during the 27 seasons. Ninety-six percent of all groves of this study had less than 80 trees per acre.

Age of Grove

Orange trees produce fruit somewhat in proportion to age. Age of tree from time of setting in the grove is the easiest and most convenient method of designating groves when comparing yields, costs and returns. From the inception of this work, groves had been divided into two age groups: Groves 10 years of age and under and groves over 10 years of age.

Distribution according to average age of trees of the 55 groves is included in these data. The average age of individual groves varied from 3 to 60 years. Thirteen percent of these groves were 10 years of age or less and the average age of groves included that were 10 years of age and under was five years. Eighty-seven percent were over 10 years of age, and the average age of these 12 groups was 31 years. Forty-nine percent of all groves were 21 to 35 years of age, and these same ages made up 56 percent of the groves over 10 years of age.

Trees seldom produce fruit during the first two seasons after setting. Some fruit is usually produced during the third season. Substantial increases in yield are common each season after the third year for a number of seasons. Data on tree ages of 16 years and older for the state are not available, which precludes the possibility of making a comparison of tree ages of this study with those of the state.

Many groves included in this study had mixed ages of trees. In such cases the average age was used. This average was weighted by the number of trees of each age.

Groves 10 Years of Age and Under

Averages are for the seasons of 1931-32 through 1957-58.

The number of groves of these 5 and 10 year ages have been rather limited in these records during recent seasons, although the average for the 27 seasons has been 14 groves per season. The average age per season has varied from three to nine years, and the average for all 27 seasons was seven years. The acreage included has varied from 156 to 832 acres per season, with the average being 374 acres.

The average number of boxes of fruit harvested from this group of groves was 79 boxes per acre for the entire period. The average yield of 79 boxes per acre is 29 percent of the yield of the older group of groves 23 years of age.

Operating costs per acre averaged $65.62 for the 27 seasons of 1931-58. This average is 51 percent of the operating costs of the older group of groves which had an average age of 23 years.

Returns from fruit averaged $96.07 per acre for the 27-year period. This was 26 percent of the returns for the older group. Returns per box were slightly higher on the older group.

Returns above operating costs average $30.45 per acre annually for

the 27-year period. This was 13 percent of the corresponding figure of the older group. There were eight seasons, 1947-48 and 1951-58 when returns from fruit failed to pay operating costs. Per-box returns above operating costs averaged 39 cents for the 27-year period. Upon dividing the first 25 years of this period into five 5-year periods, the per-box returns above operating costs were 36, 43, 133, 43 and –58 cents, respectively for the five periods.

High fruit prices during the third period accounted for the good showing of the period when prices by seasons ranged from 76 cents to $1.85 per box. The five seasons of 1946-51 averaged 43 cents in returns above operating costs, and the average for the five seasons of 1951-56 was a loss of 58 cents per box. The average age of the latter seasons was only five years.

Interest on investment in grove land and trees was calculated from the grove operator's estimate of the valuation. The estimate requested was the investment in land and trees from the point of view of a long-time fruit-growing enterprise. Such valuations are often less than prices of grove sales during periods of high fruit prices, and are usually higher than grove sale prices during periods of depressed fruit prices.

Interest on estimated grove valuation at 6 percent averaged $26.64 per acre for the 27 seasons. This figure was 54 percent of the interest on the older group of groves.

Total cost without owner supervision includes operating costs and interest on the grove investment. Interest on the grove investment is a production cost, although many growers do not so consider it. When interest is not considered as a cost, the operating costs figure is the one desired.

Total cost without owner supervision averaged $92.26 per acre for the 27-year period, or $1.17 per box. This per-acre figure was 52 percent of the corresponding figure for the older group of groves. The per-box figure of $1.17 was 80 percent higher than that of the older groves.

Net returns, after considering interest on the grove investment as a production cost, averaged $3.81 per acre annually, or five cents per box. There were 12 of the 27 seasons when returns from fruit were less than the total cost without owner supervision.

Groves Over 10 Years of Age

The number of groves of these records over 10 years of age varied from 9 to 56 per season and averaged 44. The first two seasons, 1931-32 and 1932-33, had considerably less than the average number of groves included. The grove acreage varied from 160 acres in 1931-32 to 1262 acres in 1947-48, and averaged 885 acres per season. The latter figure was 0.33 percent of the average acreage in Florida bearing orange groves over this period.

The acreage per grove included in these records has not varied violently over this period. The average acreage per grove was 18 acres for the 1931-32 season. Since that time the seasonal average has varied from 13 to 26 acres per grove, and the average for the 27 seasons was 20 acres. The acreage per individual grove varied from slightly less than five acres to 82 acres, with 65 percent with less than 20 acres in the 1957-58 season and 90 percent with less than 40 acres.

The average age of groves from time of setting the nursery stock varied by seasons from 18 to 31 years and averaged 23 years for the 27-year period. The average age of the 48 groves included in the 1957-58 season was 31 years. The age of grove should be kept in mind when comparing data, as it is accountable for a sizeable portion of the variations between groves or groups of different ages. Over the 27-year period the average increase per acre of the 31 year old groves over the 18-year old groves was:

Number of boxes harvested	54%
Total operating costs	48%
Returns from fruit	54%
Returns above operating costs	56%

The number of trees set per acre remained rather static around 65 trees for the older group of groves throughout the record period. Such is not true of the younger group. The older group increased from 60 in 1932-33 to 69 trees per acre in the 1948-49 season and recent seasons have varied between 65 and 67. The average for this group during the entire period was 65. The average for the younger group was 68.

It should be pointed out that these data include records for some groves for only one season. Other groves were included for varying numbers of seasons up to the entire 27 seasons. This turnover of the groves making up the records materially affected the number of trees per acre from season to season. The 5-year averages for the younger group were 61 during 1931-36, 74 during 1936-41, 72 during 1946-51 and 63 during 1951-56. The sample of younger groves has been rather small, so much so that upon the groves attaining the age of 11 years and transfer into the older group, there have not been sufficient acreages to materially change the average number of trees per acre of the older group.

Boxes harvested per acre averaged less than 200 each season prior to 1938-39. Average fruit harvested since that time, 1938-58 ranged from 223 boxes in 1939-40 to 437 boxes in 1953-54. The 1953-54 figure was the highest of the 27 seasons and was 16 percent higher than the second highest, 378 boxes in 1954-55, and 290 percent higher than the 112-box average in 1933-34. The average age of groves in 1957-58 was 31 years, which was four years older than in 1950-51 and 13 years older than in 1931-32. There were seven of the 27 seasons, 26 percent, when less than 200 boxes were harvested per acre. The average age of trees during these seven seasons was 19 years.

The average number of boxes harvested per acre for each of the five-year periods were: 1931-36 — 140; 1936-41 — 213; 1941-46 — 293; 1946-51 — 338 and 1951-56 — 372. Yield for the third period was double that of the first, and the fifth period was 266 percent of the first. Some of the reasons for these increases in the number of boxes harvested per acre were

(Continued on Page 28)

The LYONIZER

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Reports Of Our Field Men . . .

SOUTH POLK, HIGHLANDS, HARDEE AND DeSOTO COUNTIES

C. R. Wingfield
Phone: Glendale 3-4537
Avon Park, Fla.

As of this writing hurricane Esther appears to be no longer a threat to the State of Florida. There is however a remote possibility that it will be felt in the extreme northeast section of the state. This section is very much in need of some rains and we hope we can get some from this disturbance. If not it will be necessary to get back to irrigating. Up to this time we are just getting by. The citrus trees are holding up very well but some areas will show a little wilt at times. Color of foliage is holding up good and some fruit has sized up very good but in the drier areas it is a little small.

Grapefruit appeears to be breaking in color and it was reported today that the first shipment went into the market. Oranges are showing a little break in color and with favorable conditions we might have some early maturity. Some fruit has been selling but buyers do not appear to be very active. With possibility of early movements it might stimulate buyers.

Young trees are being fed and the cover crops are being incorporated into the soil. This is about the extent of activity.

HIGHLANDS AND POLK COUNTIES

Jack Rubush and Gene Swearingen
P. O. Box 1304
Winter Haven, Fla.

At the time of this writing we are beginning to get some showers which are much needed in some areas. These showers are the effect of hurricane Esther and we are all glad that showers are all that we should experience from this hurricane.

Many growers are beginning to think about the fall fertilizer application which will be getting underway next month.

We have seen some fruit trucks on the road and noticed some grapefruit being picked, so it looks like the fruit season will be coming in in full swing shortly.

The rust mites are still with us in many groves, and we have noticed a buildup of red scale in some groves. If a spray is going to be applied for one or both of the above, it would be a good idea to think about including a material such as Tedion to control the red spider which is beginning to build up now. This may save a spray just for red spider later in the season.

HILLSBOROUGH, PASCO AND SUMTER COUNTIES

C. W. Dean
Gibsonton, Fla.
Phone Tampa 40-2592

This section of the country is in need of some showers (9-8-61). Some spots have only had light to moderate showers, other have been heavier.

Oranges have begun showing a good size. Have noticed quite a lot of splitting on early varieties of fruit. It seems that it has slowed somewhat.

Fall squash are beginning to come up with a healthy looking plant. Quite a lot of okra around which is in all stages of size.

Fruit buyers are around beating the bushes pretty heavy now. From the information I gather the price is still holding at 40c per lb. solids.

SOUTH HILLSBOROUGH, MANATEE AND SARASOTA COUNTIES

R. C. Revels, Jr.
P. O. Box 3332, Apollo Beach, Fla.

Tomato fields are looking a lot better since the heavy rains have slowed. Most of the growers have a good stand and plants range from 6 to 12 inches high. Due to the heavy rains during the plantings the stand of plants vary in size. A lot of growers had to seed over in some cases two or three times. After heavy rains such as we have had, it is advisable to increase the NGO in your fertilizer as it is depleted from the soil faster than most minerals by heavy rains.

Beginning next month (October) the fall application of citrus fertilizer will start out. Young groves should have had the last application by now for the fall unless set in a very warm section. The rust mites are still with us even though some growers have sprayed as many as three times. Mites seem to be the worse in many years. Growers with a good spray schedule seem to be less hurt.

WEST HILLSBOROUGH, PASCO AND PINELLAS COUNTIES

Calvin P. Lloyd, III
Tampa, Fla.

The rains of the past few weeks as of this writing, September 18, have been enough to bring a new growth flush to all the young trees, and in most cases a good flush to the older trees. The groves planted on lower ground have done much to recover this year as there has been no problem of an over-abundance of water in this area. However, with these past few rains, the problem of splitting is starting to show up in some groves.

The insect at the top of every grower's list to eradicate at this time is the rust mite. These mites have come back with amazing populations behind the summer oil and Zineb application. Most growers are wisely dusting with sulfur, where weather conditions will permit, to control the rust mite until the fall spray.

The young trees should have their last application of fertilizer for this year within the next few days in order that they will be in a dormant state when cold weather comes.

TWENTY-SEVEN YEARS OF ORANGE COSTS AND RETURNS IN FLORIDA

(Continued from Page 25)

increases in average age of trees, better fertilizer practices, larger proportion of fruit harvested due to good prices and the development of fruit processing.

Fruit prices were low for some seasons of the first two 5-year periods, resulting in some of the fruit remaining unharvested. Less damage from low temperatures and better grove care in general during the last three periods contributed to higher yields for these periods; and higher prices together with the development of fruit processing facilities, contributed to higher proportion of the fruit being harvested.

The number of boxes harvested per acre varied from 37 to 646 on 48 groves over 10 years of age in the 1957-58 season. Fifty-two percent of these groves had less than 250 boxes harvested per acre in 1957-58. Sixty-nine percent had less than 350 boxes. From 23 percent of these groves less than 150 boxes were harvested per acre in 1957-58.

Operating costs were made up of five items: (1) Labor, power and equipment, (2) fertilizer materials, (3) spray and dust materials, (4) state and county taxes and (5) miscellaneous costs. Operating costs for the first 11 years of this study, 1931-42, averaged $70.26 per acre. The following season, 1942-43, such costs were $104.85. There was an increase in operating costs each year from 1941-42 to 1947-48, which means an increase each season for six successive seasons.

During part of this time the increase was rather rapid, and these costs were $204.74 per acre in 1954-55. The 1950-51 operating costs were $170.11 or 14 percent more than 1949-50. The 1954-55 costs were the highest of the 27 seasons and 37 percent higher than 1949-50 and 369 percent of the lowest cost season of 1934-35. Operating costs per acre in 1957-58 were $194.52 or 95 percent of the highest of these seasons in 1954-55.

Operating costs exceeded 50 cents per box eight times in the 27 seasons, 1946-48, 1951-53, 1954-58. The average for all seasons was 47 cents. During the 1939-44 period, when operating costs were increasing on the per-acre basis, the per-box costs fluctuated from 34 to 37 cents. Such costs were 48 cents in the 1944-45 season. Hurricane winds materially reduced the fruit harvested in 1944-45, which increased the costs per box. Also, an increase of 8 percent over the previous season in operating costs per acre further increased the per-box costs. Eight of the 27 seasons had operating costs of less than 40 cents per box, and these seasons were

Operating costs per box averaged 71 cents during the 1957-58 season, the highest of the 27 seasons. This cost was increased by a low yield of 274 boxes due largely to cold damage of fruit. This was the lowest yield since 1944-45 when it was reduced by hurricane damage. The range in per-box costs was from 22 cents to $5.09 in 1957-58. Twenty-seven percent of the groves had such costs of less than 50 cents. Another 25 percent had costs from 50 to 79 cents and 48 percent had costs of 80 cents or more per box.

More money was spent for labor, power and equipment than any other cost item. The average was $57.22 per acre per season and ranged from $19.07 to $99.41. This cost exceeded the cost of fertilizer materials in 20 of the 27 seasons. The spread between the costs of the two items increased during recent seasons with the cost of labor, power and equipment increasing faster than fertilizer materials.

There were six seasons, 1931-37, when the operating costs did not amount to as much as the cost of the one item of labor, power and equipment for any one of the past 12 seasons, 1946-58. Money spent for this item was $95.05 per acre in 1957-58, the second highest of the 27 seasons. The season of 1956-57 was highest at $99.41. The increases in the number of boxes harvested as this period progressed lessened very materially the increases in the cost on a per-box basis.

Labor, power and equipment costs per box were 35 cents in 1957-58, an increase of eight cents over the previous season. Such costs were seven cents less in 1947-48 than in 1957-58, and decreased to 22 cents in 1948-49

So You Would Like To Set A Citrus Grove

. . . BY . . .
ZACH SAVAGE
AGRICULTURAL ECONOMIST
AGRICULTURAL EXPERIMENT STATIONS

The best citrus land available should be used. Good citrus land is worth several times as much as poor or unsuitable land. Suitable land is a necessity in order to compete in efficient citrus production. If suitable land cannot be obtained, it would be best to purchase a good grove already set on good citrus land. Some points to consider in suitability of land are:

1. Use soil of considerable depth for rooting space and to afford good water and fertilizer availability.
2. Avoid the use of land with a hardpan which restricts rooting depth and has other unfavorable complications unless competent advice is obtained and strictly adhered to.
3. See that topography is such as to afford good air drainage with freedom from erosion.

Use a rootstock suited to the soil type and capable of producing the desired quality in the scion variety. Due recognition should be given to possibility of virus problems. Budwood should be from trees producing high yields of true-to-type fruit that is known to be free of virus disorders. Good nursery stock, even at an extra cost of several dollars per acre, will produce extra dividends over the period of many years the trees are expected to be in production.

Some considerations in deciding variety or varieties to plant are:

1. Personal likes, dislikes, and preferences.
2. Adaptability of variety to grove location or site.
3. Congeniality of variety with rootstock choice.
4. Adaptability of variety to local and general market opportunities.
5. Acreage and volume anticipated.
6. Predominant kinds and varieties near by and in the State.
7. Locate in advance available nursery stock of variety desired.

Current indications, trends, and practices include:

1. Profitableness in order of net returns per acre by varieties commonly grown during recent seasons were: (1) Temple, (2) Valencias, (3) Hamlin, (4) Pineapple, (5) Tangerines, (6) Marsh Seedless, (7) Duncan Grapefruit.
2. Other varieties that might prove more profitable than some of the above named but less commonly grown are Tangelos, Navels, Murcotts, red and pink grapefruit, and Satsumas.
3. Tree movement from Florida nurseries for both resets and new plantings in recent seasons were in the following order: (1) Valencia, (2) Hamlin, (3) Pineapple, (4) Murcott Honey, (5) Marsh Seedless, (6) Parson Brown, (7) Queen, (8) Temple, (9) Tangerine, (10) Orlando Tangelo, (11) Lue Gim Gong.
4. Due consideration should be given the possibility of selling a portion of every crop for processing and for selling entire crop for processing in seasons of low fruit prices.

which was six cents less than 1947-48. The average for the 27 seasons was 21 cents.

The cost item of second importance was fertilizer materials. This item was 36 percent of the average operating costs and amounted to $46.01 per acre. The range in the seasonal cost per acre for fertilizer materials was from $21.98 to $71.67. During 30 percent of the seasons this item averaged less than $30 per acre. Fertilizer cost was $29.45 per acre in 1931-32 but was not that high in seven of the following 10 seasons, 1932-42. These costs increased for the ensuing five seasons when the high up to that time of $63.63 was reached in 1946-47.

There was a reduction of 18 percent in such costs in 1948-49 as compared to 197-48. A major contributing factor was low fruit prices. Fertilizer material costs increased to $71.67 in 1951-52 which was the highest of the 27 seasons. Fertilizer expenses for 1957-58 at $60.10 per acre was a decrease of 16 percent under 1951-52.

Nitrogen is an important element in fertilizers added in citrus production. The range was from 0.24 to 3.94 pounds of nitrogen applied per box, and the average was 1.11 pounds. There were 23 percent of the groves that had less than 0.50 pound applied per box, and 56 percent had less than 0.80 pound.

There were 62 percent of the groves that received 0.60 pound or more. The usual recommendation as to the amount of nitrogen to apply is 0.40 pound per box of oranges anticipated. See Florida Agricultural Experiment Stations Bulletin 536A. There were 17 percent of these groves that received amounts of nitrogen within the range of 0.30 to 0.49.

An additional 6 percent receives less than 0.30, making 23 percent that received less than 0.50 pound of nitrogen per box harvested. The remainder, 77 percent of the groves, received 0.50 pound of nitrogen, or more, per box. Forty-four percent of these groves received 0.80 pound or more per box of fruit. The small yield for the season automatically increased the amount of nitrogen added per box.

Spray and dust material costs averaged $10.01 per acre for the 27 seasons and constituted 8 percent of the operating costs. There were 11 seasons, 41 percent, with spray and dust material costs of less than $8.00. The range of the seasonal averages was from $2.57 in 1931-32 to $20.88 in 1956-57 and was $19.33 in 1957-58. The range in such costs per box was from two to seven cents, and the average was four cents. Eighteen seasons, or 67 percent, had such costs of three cents per box or less.

Spray and dust materials cost $19.33 per acre, or seven cents per box, in 1957-58. This cost per acre varied from nothing to $62.37. There were 12 groves, or 25 percent, that received no spray or dust. Fifty-eight percent of the groves had such costs of less than $20 per acre, and 25 percent had such costs ranging from $5.00 to $14.99. Thirty-three percent had such costs of $25.00 or more and on 17 percent it was $40.00 or more.

State and county taxes averaged $9.01 per acre for the 27-year period, or three cents per box. The range in such costs per season was from $4.68 per acre in 1934-35 to $16.74 in 1956-57. The seasonal average was less than $6.00 in eight seasons, or 30 percent of the seasons. The second highest season was 1955-56 at $15.60 per acre.

The range in state and county taxes per acre for 1957-58 was from $1.14 to $37.19. Twenty-three percent of these groves had taxes less than $10.00 per acre. 37 percent between $10.00 and $14.99, or 60 percent less than $15.00 per acre.

Miscellaneous cost averaged 5 percent of operating costs for the 27-year period, or $7.13 per acre. This amounted to two cents per box. Variations in seasonal averages were from $0.66 per acre in 1933-34 to $19.43 in 1954-55. Miscellaneous costs include such items as overhead, trees for replacement, city taxes, drainage district assessments, and fuel for grove heating.

Returns from fruit averaged $372.69 per acre for the entire period or $1.36 per box. Seasonal averages per acre varied from $83.50 in 1932-33 to $858.00 in 1945-46. The per-box averages varied from 54 cents in 1947-48 to $2.47 in 1945-46. Returns from fruit amounted to $185.21 per acre in 1947-48, the lowest since 1940-41. However, there were 10 of the 27 seasons with lower returns per acre.

(Concluded Next Issue)

To prevent extensive damage by insect pests, homeowners are urged to make frequent thorough inspections of their lawns, especially during the summer.

STATE OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946, OF THE CITRUS INDUSTRY, PUBLISHED MONTHLY AT BARTOW, FLORIDA, FOR OCTOBER, 1961.

STATE OF FLORIDA,
COUNTY OF POLK.

Before me, a notary public in and for the State and County aforesaid, personally appeared S. Lloyd Frisbie, who having been duly sworn according to law, deposes and says that he is the Editor of The Citrus Industry and that the following is to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation) etc. of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March, 1922, embodied in Section 537, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher — Associated Publications Corp., Bartow, Fla.

Editor—S. Lloyd Frisbie, Bartow, Fla.

Business Manager — S. Lloyd Frisbie, Bartow, Florida.

2. That the owners are:

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3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4 That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholders or security holders appears upon the books of the company as trustee or in any other fiducary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was 4971.

Sworn to and subscribed before me this 29th day of September, 1961.

S. LLOYD FRISBIE, Bus. Mgr.

MARY H. DUNSTON, Notary Public
My commission expires Nov. 1, 1964.

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